


Museums as Providers of OnLine Multimedia Education in the 21st Century



by

Julia Rodriguez Buryk

A Master's Project

Presented to the Arts Administration Program
of the University of Oregon
In Partial fulfillment of the requirements for the degree of
Master of Arts In Arts Management
March 2002

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Approved by : _____
Dr. Linda Ettinger

Date : _____

ABSTRACT

This study investigates the potential role of museums as online multimedia educational providers for the 21st century, framed within the context of current educational reform. Literature published between 1990-2001 was selected for review. Category construction was employed for data analysis. Results present four emerging themes: (1) educational needs in the 21st century; (2) the teaching and learning paradigm shift; (3) new educational technology tools; and (4) the changing educational role of museums. Suggestions for action are included.

CURRICULUM VITAE

Name of author: Julia Elizabeth Rodriguez Buryk
Place of birth: Akron, Ohio
Date of birth: April 6th, 1970

EDUCATION

Masters of Science, Arts Management with a concentration in Museum Studies, Arts Administration Program, University of Oregon, Eugene, OR March 2002

Bachelor of Fine Arts in Photography, University of Hartford, Hartford Art School, West Hartford, Connecticut, May 1992

PROFESSIONAL EXPERIENCE

ARTS MANAGEMENT/ PROJECT COORDINATION

Museum Intern, Oregon Historical Society, Portland, OR Oct. 01-April 02
Conducted a survey of the photographic archives to create photographer specific database.

Museum Intern, U. Oregon Museum of Art, Eugene, OR March 01 - June 01
Inventoried the entire photography collection, evaluating condition in preparation for collection to be moved during museum reconstruction.

Administrative Assistant Arts Administration,
University of Oregon, Eugene, OR Sept 00-March 01
Graduate Teacher Fellowship Award for Arts Administration Department
Librarian of the AAD Department Resource Room. Assisted Program Director with marketing the department and courses by developing department's promotional materials, on-line press releases, and updating 2001 edition of program guide.

Web/ Exhibit Intern, Alaska SeaLife Center, Seward, AK June 00-Aug 00
Produced virtual tour for Center's web site. Designed interpretive floor display and assisted Exhibit Manager with design and installation of exhibit signage. Provided evaluation of current interactive exhibits.

Marketing/Promotions Coordinator

Lanes Arts Council, Eugene, OR Sept. 99-June 00
Designed logo and all promotion graphics for special outdoor art installation project, *Millennium Clothesline*. Managed production of all printed products and public relation activities to all media including special event interviews.

Acquisitions Editor,

Publications International, Ltd. Consumer Guide, Lincolnwood, IL Aug. 93-June 95
Publisher of 300+ yearly trade, promotional, educational, general book titles and magazines.

Project Coordinator for multiple projects under strict budget limitations and time-lines. Performed concept research, negotiated of contracts/fees and supervised/organized creative contributors with publishing schedule, hired photographers, scheduled shoots, obtained props and hired models.

Coordinator/ Campus Organizer, ConnPIRG, W. Hartford, CT 1990-1991

Founding member of the University's ConnPIRG chapter, organized and motivated support of student body to gain official chapter status. Developed and organized voter registration & education program as an official Registrar. Motivated students to learn about candidates and exercise their right to vote.

PROFESSIONAL EXPERIENCE PHOTOGRAPHY

Freelance Photographer, Julia Buryk Photography June 98-ongoing
Self-employed shooter for selected clients.

Digital, and 135mm format architectural images. Re-touching and photo digitizing of prints and slides, images provided on CD-rom.

Optical Printer & Film Technician, Portland, OR Oct. 96 -Aug .99
Portland's premier professional full service lab.

Self supervised, fast paced position processing, and shooting 135mm, large format duplicates, negatives and copy slides, balancing a heavy production workload with customer service staff to provide a high quality product to the client.

Color Printer, Flashback Premium Photo Lab, Portland, OR Aug. 95-Oct. 96
Formally Portland's largest mini-lab chain.

Fast paced production environment, responsibilities included manager's assistant, color balancing of machines, maintenance of equipment, mixing of chemicals, store cashout and closing.

Photography Editor,

E The Environmental Magazine, Norwalk, CT Sept. 92-June 93
Nonprofit, bimonthly publication, circulation. 75,000

Researched and obtained photo visuals pertaining to stories, with zero budget, assisted with art/advertising production, sizing and paste-up with extensive stat camera work.

Photography Intern, SALT Magazine, Portland, ME

Aug. 91-Dec. 91

Nonprofit B&W documentary cultural preservation quarterly.

Produced independent photo essay, attended critiques, historical preservation, archiving lectures, and design meetings. Collaborated with a writer on the story "Pristine Castine." Story published in September 1992 issue.

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CHAPTER ONE

Brief Purpose

The purpose of this study is to investigate the potential role of museums as online multimedia educational providers for the 21st century, framed within the context of current educational reform and the paradigm shift of teaching and learning pedagogy. This was accomplished through a review of literature selected from across several disciplines that discussed current theories of teaching and learning and the role of museums as educators. This study is designed for Museum Educators and hopes to demonstrate the present opportunity for creating a new perception of museums as vital educational providers.

Full Purpose

In 1984, the Commission on Museums for a New Century released a report with sixteen recommendations. Recommendation five stated that “Education is the primary purpose of American museums” (AAM, 1984, p. 31). It continued by suggesting that museums look to integrate education into all museum activities. Recommendation seven suggests developing strong partnerships with schools and “asked that museums function not as a supplement to schools but as institutions of equal status that embrace teaching and learning in an informal setting that augments formal education” (Blackmon, 1999, p. 82). Further recommendations call for the acknowledgment of the changing age of the population by “providing high-quality, educational experiences for people of all ages” (p. 32). This Commission report established the historical perspective from which this study is based.

This study attempts to connect ideas from across the disciplines of education, technology, and museology, drawing upon relevant literature to demonstrate that the 21st century presents opportunity for museums to assume a role as active educational providers. The assumption underlying this study is that this role can be achieved within the United States educational infrastructure through utilization of the benefits of new technologies.

Background

My interest in online education being provided by museums began the summer of 2000 in Seward, Alaska, where I worked as an educational and web intern at the Alaska SeaLife Center (ASLC). The ASLC is a relatively young facility, opening in May 1998 with a mission focused on Research, Rehabilitation and Education. Presently the Center does not utilize their web page to offer educational programming online. However, each year the ongoing active research taking place at the center produces thousands of images, hours of tape, and scientific records. I quickly envisioned the potential for the Center to be a valued and active member of the educational community by offering programming that could reach from early education through post doctorate and community lifelong learning locally and statewide. Through the assistance of new technologies I felt these treasures could be made available to the public, connected to school curricula, or college students and scientist worldwide. It seemed to me that a great potential was being left to waste. Some people may blame the lack of funds as the reason that these programs were not being developed. It was my realization that this may be the result of a larger issue.

Perhaps it is a lack of vision about who is responsible for education—and how it can be delivered.

Problem

How has the educational context been transformed at the beginning of this century? How has this transformation been affected by the new technologies? “It has become a truism that we’ve left the Age of Manufacturing and entered the Age of Information” (Mintz, 1998, p. 19). This Information Age, which has arisen in the last years of the 20th century has been driven by the explosive growth in information and communication technologies (Mintz, 1998). The ability for broad access to and use of these technologies has transformed our lives (Mintz, 1998). As a result, there has been a convergence of the areas of communication, education, technology, and design that has begun to unite these once separate disciplines.

All members of society are feeling greater demands and increased competition to keep up with the accelerated pace of our modern lifestyles (Thomas, 1991; Falk & Dierking, 2000). As a result, education and learning have become high priorities (Thomas, 1991), and institutions beyond formal schools, such as museums and libraries with educational missions, find they are in greater demand (Falk & Dierking, 2000).

Museums have been forced to evaluate their strengths and reflect on how to exploit the benefits of the new communication and design technologies to better enhance their missions, primarily that of education. Museums were quick to utilize the Internet for

outreach (Bearman & Trant, 2001), and more recently many museums have begun providing educational programming online (Sumption, 2001). As society's demand for education increases and museums strive to become vital members of the educational infrastructure, how can they use the Internet to help accomplish this?

CHAPTER TWO

Method

This study is structured as a literature review that integrates themes from across disciplines. Defined by Merriam (1998) “A literature review is a narrative essay that integrates, synthesizes, and critiques the important thinking and research on a particular topic” (p. 55). Further, Schumacher and McMillian (1993) believe that literature reviews add to the understanding of a selected problem and place the results of the study in a historical perspective.

Literature was collected from several fields including: education, focusing on educational reform, teaching and learning, and distance education; technology, focusing on new educational technologies tools using interactive, multimedia and networking capabilities; and museums, specifically education and use of technology. Relevant literature was found in books, journals, conference proceedings, and special reports, and was obtained through searches on the University of Oregon’s Library Janus system and Portland State University’s Library system, and using the search indexes, Academic Search Elite and Art Access.

The key search words or phrases used were:

- Education, using the subtopics: Online education, distance education, educational reform;

- Learning, using the subtopics: Free-choice learning, lifelong learning, learner centered learning;
- Educational Technology, using subtopics: Multimedia, Interactive Design;
- Museums using subtopics: Museum education, museum learning, adult learning, free-choice learning, museums online, museums and the web.

Literature was also obtained through searching the Internet and accessing web pages for bibliography materials. Web sites used were:

- <http://archimuse.com/mw2001> The Archive & Museum Informatics web page connecting for past Museums and the Web conferences;
- <http://www.noodletools.com> A database of Academic Bibliographies;
- <http://www.ilinet.org> The Institute for Learning Innovation Publications;
- <http://www.sedl.org/pubs/sedletter> The Southwest Educational Department Laboratory online newsletter SEDLetter;
- <http://mlc.lrdc.pitt.edu/AnnoTrantdlit.html>, Museum Learning Collaborative.

The research design for the literature review was based on Krippendorff's (1980) definition of Content Analysis, a "research technique for making replicable and valid inferences from data to their context" (p .22). Specifically, the literature was analyzed through employing the method of category construction as described by Merriam (1998). This is a process of constructing categories or themes that capture some recurring patterns that cut across the preponderance of the data. These categories and subcategories are constructed through the constant comparison of data units, which have been sorted

into groupings that have something in common. Merriam (1998) describes a three-part analysis method in which (1) notes are made on the initial read next to bits of data that are interesting, potentially relevant or important to the study. After the entire text of the article has been read, (2) these notes are grouped into like categories. “These categories are conceptual elements that cover or span many individual examples of the category” (p.182) Further, the final level of analysis involves (3) “the process of systematically classifying data into some sort of schema consisting of categories, themes, or types” (p. 187). These categories not only describe the data but to some extent they also interpret the data. Since there is more to be understood about the phenomenon than the separate categories, Merriam sees providing continued analysis past the formation of categories as a way to link the conceptual elements together in a meaningful way (Merriam, 1998, *Qualitative Research and Case Study Applications in Education*).

The initial reading of the literature, which formed step one of the data analysis, was guided by two overarching questions:

- How has the educational context transformed at the beginning of the new millennium?
- How can museums be active and vital providers of online education?

Then, following Merriam’s method described above, notes were taken and later reviewed and coded for recurring themes relevant to these two overarching questions. Four themes emerged and were used to develop the outline for the Literature Review section of this paper. Using these four themes as section headings, the literature review is designed to connect the ideas from these separate areas as a way to demonstrate to museum educators

the current opportunities for developing a new role as vital educational providers. The recurring themes determined by this analysis were: Part I, New educational needs of the 21st century, and the paradigm shift of teaching learning; Part II, New educational technology tools; Part III, The changing educational role of museums; and Part IV, Museums as vital members of the educational infrastructure.

Limitations

Literature was drawn from published (including posted online) materials within the last decade, 1990 to 2001. Since technology and our expectations of it change so rapidly and my desire was to be as current as possible in my review, the emphasis was on materials dating from 1995 to 2001. Some literature was consulted with the original publishing date prior to this time--mainly that pertaining to research methods. Also, the 1984 report from the *Museums for a New Century* was used to provide a background and historical perspective. In reviewing literature on educational technologies, I focused on distance or online educational delivery as it has developed with the use of the Internet since about 1993. Literature on educational reform was also limited to that which applied to the discussion of new perspectives for the next millennium and the increased possibilities of new technology tools.

The turning of the new century (2000) was a landmark time across many disciplines. For the prior 20 years, educators, technologists, and museum professionals were all attempting to prepare for a different future. The 1984 *Museums of a New Century* report and the 1994 *Excellence and Equity* document provided historical

information for my review. By deciding to review literature in the three disciplines of education, technology and museology, I was able to investigate where these reports stand at the beginning of 2002.

Terms

- Distance Education

“Is the use of technology to partially or fully replace or augment the traditional classroom” (de Moura Castro, 1998, p. 133).

- Distance Learning

Learning that take place via electronic media linking instructors and students who are not together in a classroom (Merriam-Webster, 1972).

- Free-choice learning

Learning experiences, which are non-sequential, self-paced, and voluntary (Institute for Learning Innovation, web site, (www.ilinet.org/freechoicelarning.html, 10/28/01).

- Information Society

Implies contemporary societies whose primary concern is the management of learning on an unprecedented scale (Thomas, 1991).

- Interactive

The user's ability to interact with media through different methods of engagement (Barker & Tucker, 1990).

- Knowledge

The word knowledge appears repeatedly in the review of literature and has best been defined as “a dynamic process, a vibrant living thing, resting on shared assumptions, beliefs, complex perceptions, sophisticated yet sometimes crazy logic, and the ability to

go beyond the information given, it is the correct abstraction for describing what people communicate to one another” (Eisenstadt & Vincent, 1998).

- Learners

The term Learners is not synonymous with the traditionally used word, students. Learner is used to imply that the individual is taking an active role in their learning process (Forsyth, 1998, Thomas, 1991).

- Learner-centered

Learner-centered is an environment where the responsibility is shared and the exchange between teachers and learners is equal. (Forsyth, 1998).

- Lifelong learning

Implies that education takes place from birth to death and cannot be limited to a certain phase of a person’s life. This is different from continuing education which is usually limited to career skill advancement and takes place still within in confines of established educational structures (Griffin, Holford, & Jarvis, 1998).

- Multimedia

Implies using the computer as a device that can simultaneously present a collation of disparate media (i.e.: sound, images, text, and video) (Barker & Tucker, 1990).

- Museum Education

Programs developed by museums specifically for educational purpose. The “museum educational model focuses on experiential and content-based problem-solving activities working with real objects, on a participatory, hands-on, learning, on apprenticeship under the tutelage of people engaged in real world intellectual activity; and learning experiences designed to engage all senses” (Skramstad, 1999, p. 118).

- New technologies

Generally refers to communication media tools that incorporate multiple elements such as sound, text, and visual elements which often use the aid of a computer to merge these elements into one composite medium. This term is also used to refer to network communication technologies such as the Internet and the World Wide Web (Thomas & Mintz, 2000, & Perlin, 2000).

- Online Learning

Learning that occurs while engaging in programming delivered with a networked delivery method such as the Internet (Dede, 1998).

CHAPTER THREE

LITERATURE REVIEW

Introduction

How has the role of education and learning changed in the new millennium? How can museums play a vital role in the educational infrastructure? Learning and education in the 21st century is becoming a revolution of reform (Shields, 1994). The demands of the new century are cause for reevaluating these and other questions concerning the United States' educational objectives and theories of learning (Dede, 1998). This reevaluation shows much promise for a paradigm shift (George, 1999) in the way governments and the public view responsibility of and access to education and learning.

The objective of this section is to draw connections among several areas of literature in order to show the support, need, and potential now available to museums, through the use of new technologies, to serve in educational leadership roles. The areas of literature explored are presented in the following three sections: Part I: The transformation of the educational context in the 21st century; Part II: New technologies and the educational transformation; Part III: The changing educational role of museums; and Part IV: Museums as vital online educational providers.

PART I. TRANSFORMATION OF THE EDUCATIONAL CONTEXT AT THE START OF THE 21ST CENTURY

Introduction

The purpose of Part I is to examine the transformation of the educational context at the beginning of the 21st century. Five sections frame this part, including: (1) The Educational Needs of the 21st Century, addressing the changing educational demands, educational reform, and new ideas for expanding education; (2) A New Focus on Learning, addressing the new learning paradigm which sees an increased demand for learning, different roles for educators and teachers, and the emerging of the “Knowledge Society” (Eisenstadt, 1998); (3) Lifelong learning highlights the shift from continuing education to lifelong learning; (4) Free-choice learning, addresses the shift from informal learning to free-choice learning and outlines the elements that characterize this focus. Further, it briefly addresses the increased growth in museums and other educational institutions who present free-choice educational programming; and (5) Learning Institutions as Partners in Education addresses the concept of reinventing education through partnerships between educational institutions, government, and the public.

The Educational Needs of the 21st Century

After decades of international studies and experiences, it is well recognized that education is crucial for economic development, human welfare, societal advancement and environmental protection. Based on this consensus, the World

Conference on Education for All, held in Jomtien in 1990, called for meeting the basic learning needs of all children, youth, and adults. These needs were to include essential learning tools (such as literacy, oral expression, numeracy and problem solving) and the basic learning content (such as knowledge, skills, values and attitudes) required by human beings to be able to survive, to develop their full capacities, to live and work in dignity, to participate fully in development, to improve the quality of their lives, to make informed decisions, and to continue learning (Haddad, 1998, p. 21).

First, it must be understood that in the 21st century educational objectives are different from past centuries or even past decades (Dede, 1998, Jarvis, Holford & Griffin, 1998). Large communities of people are admitting that the old models of education, being controlled by the schools, is no longer effective for everyone who wants—and deserves to be educated (Dede, 1998, Shields, 1994). These models focused on the needs of a manufacturing working environment and addressed individuals' solo performance, and emphasized learning specific facts and generalized principles. They are controlled by generic standards of measurements for success (Kozma & Schank, 1998).

The 21st century competitive working environment has different demands. Rather than focusing on the individual and generalized principles, today's worker must rely on team collaboration, problem-solving, and strategic planning (Kozma & Schank, 1998). And rather than learning specific facts, upon entering the workforce students today must know how to “sort vast amounts of information, generate new data, analyze them,

interpret their meaning, and transform them into something new (Kozma & Schank, 1998, p. 4). These new demands result in the need for a whole new methodology of teaching as well as a reevaluation of how, when, and why people learn.

Until recently our society has segregated education, which we thought was synonymous with learning, to formal learning environments, usually designated for the young (Falk & Dierking, 2000). Educators and advocates are in agreement that “our educational system is failing to meet the real needs of society” (Rogers, 1994, p. xxi). Csikszentmihalyi, (1995) and other advocates are asking for the recognition that our narrow perspective of schooling is in large part to blame.

Educational reformers and learning advocates are increasingly trying to shift the focus from efforts that try to mend a system that is “not working very well for any students” (Shields, 1994, p. 1), to those that “seek to redesign schools from the bottom up in order to create new institutions for the 21st century” (Shields, 1994, p.1). These efforts focus on the individual and on aiding and assisting in their learning rather than on the process and procedures of teaching (Jarvis, Holford & Griffin, 1998). Two complementary views have been suggested. One emphasizes “creating a new conception of the appropriate relationship between the school and its community, parents and families” (Shields, 1994, p.1). The second suggests that “instead of concentrating exclusively on schools as the sites for change, we must take into account the broader processes involved in formative education” (Csikszentmihalyi, 1995, p.107).

As our society begins to accept that the traditional models of education are increasingly inappropriate for all the needs in the new century, a new understanding and focus on the nature of learning will become clear.

The traditional way of managing learning has been through formal education, but this is not the only, or even often the best way. We need to understand alternative methods of learning management in order to make better use of educational resources and find the most productive avenues for meeting our learning goals (Thomas, 1991, p. xii).

The current focus is on a revised notion that accepts learning as a social activity that is ongoing and can take place anywhere, for one's entire life (Jarvis, Holford, Griffin, 1998; Thomas, 1991). "I have witnessed the emergence of learning in unexpected places, brought about by unconventional means, and producing quite unexpected results" (Thomas, 1991, p. xii). Adult educator Alan M. Thomas has for over a decade advocated that "much of our most important learning takes place outside the education systems" (1991, p. xii). He stresses that this rediscovery of the social influences of learning is resulting in our reevaluation of who is responsible for education and where in fact learning takes place.

A New Focus on Learning

It is only through understanding the concept of individual learning that educational goals can be obtained (Csikszentmihalyi, 1995). Thomas (1991) believes

that through focusing on alternative methods of learning management we will be better able to productively meet our educational goals. His position is that historically our society has placed value on education as an item to be obtained, with no guarantee that any learning has actually taken place. "When learning is seen as being important only in terms of some specific set of objectives, rather than as a process that is valuable in itself, a considerable potential threat to the fabric of democratic society exists" (Thomas, 1991, p. 3). He continues with the notion that modern society has increased individuals' demand for knowledge and learning. People are realizing that they must continue to learn throughout their lives (Thomas, 1991).

The new learning paradigm has revealed different roles for educators and teachers. No longer viewed as the holders of knowledge whose role it is to transmit information to the pupil, teachers are becoming advocates and facilitators in the role of helping people learn (Jarvis, Holford, & Griffin, 1998). Rather than being viewed as passive receivers of what teachers give, the learner is defined as someone who has a shared responsibility for their learning (Forsyth, 1998). When education no longer focuses on the teacher or lecturer but on the learners and their individual learning it becomes a *learner-centered* environment (Forsyth, 1998). The responsibility for learning falls more on the individual student who is aided by a system that supports the development of students' learning skills (Thomas, 1991; Shields, 1994). In addition, if learning is viewed as a public activity, one that the entire community is responsible for, then learning becomes a collaboration between family members, business associates, seniors, students, scientists, and people across all age groups (Kozma & Shank 1998). As

Komza and Shank (1998) state, “The entire community must elevate the importance of education in everyday life by developing a strong social commitment to the educational endeavor shared by students, teachers, parents, business and community leaders” (Komza & Shank, 1998, p. 5).

Schools and teachers can no longer be expected to be fully responsible to meet the increased demands of all citizens for learning. Learning advocates such as Jarvis, Holford, and Griffin see a new role of teachers and educators as mediators or facilitators to the access of information. Their role will be aided through the use of tools now available with new technology (Jarvis, Holford, & Griffin, 1998; Forsyth, 1998).

Lifelong learning

“In an age of rapid technological development, modern societies are constantly changing, which means that their members face a need for constant and lifelong learning” (Thomas, 1991, p. 3).

Formerly, opportunities for further education for adults were most often relegated to an area known as Continuing Education (Jarvis, Holford, & Griffin, 1998). In many cases, private businesses or institutions delivered specifically focused content designed to meet their needs (Forsyth, 1998). Today, the paradigm shift of education includes the notion that all individuals need continuous learning—now described as lifelong learning. (Forsyth, 1998; Jarvis, Holford, & Griffin, 1998). Peter Jarvis, author of the *Theory and Practice of Learning*, defines lifelong learning as various new and emerging emphases

that focus on learners rather than teachers, programs rather than curricula, integration rather than specialization, and consumer sovereignty rather than institutional provision. In our knowledge society (Eisenstadt, 1998), people have begun to accept that learning will be a continuous activity throughout their lifetime (Falk & Dierking, 2000; Thomas, 1991). Kozma and Schank (1998) advocate that changes in our entire educational infrastructure will only begin to emerge when we accept that learning can no longer be encapsulated by time, place, and age, but is a pervasive activity and attitude that continues throughout life, supported by all segments of society.

Free-choice learning

A subset of the new focus on lifelong learning has been defined as “free-choice learning” (Falk & Dierking, 2000). “In the 21st century the learning strategy of choice for most people, most of the time, will be free-choice learning” (Falk & Dierking, 2000, p. 213). Free-choice learning has in the past also been labeled as “informal learning.” The shift to the term “free-choice learning” focuses on the characteristics of nonlinear, personally motivated, learner control of the what, when, where, and with whom they are learning (The Institute for Learning Innovation web site 10/28.01).

As the public’s thirst for knowledge continues to grow people are looking for more ways to access free-choice learning options (Falk & Dierking, 2000; Thomas, 1991). Museums and other educational institutions that have historically presented free-choice educational programming are seeing interest in their programs grow (Falk & Dierking, 2000, p. 225). To cater to a broader audience, museums are beginning to

reevaluate their programs and delivery methods. Inspired by the flexibility of new technology, they are increasingly offering free-choice programs online with the help the Internet. The field of online, free-choice educational delivery is still in its infancy. Over the past decade the museum community had begun researching and evaluating onsite free-choice learning by visitors (Falk & Dierking, 2000). Knowledge gained from this research may not translate directly into the online environment but hopefully should provide museums with some insight into understanding learners that other institutions may not have (Sumption, 2001). Museums along with other online educational programmers are all interested in research that would provide them with some guidance (Bearman & Trant, 2001; Sumption, 2001).

Learning Institutions as Partners in Education

Thomas (1991) feels that modern society needs to recognize that our demands for learning have changed. “The learning needs of citizens today, even more in the future, are so great that society needs to do everything possible to maximize their capacity to meet those needs” (Thomas, 1991, p. 163). We need to not only reevaluate our educational system but also our commitment to our responsibility. Thomas envisions a society committed to learning as one “that bases its very essence on the mobilization of the learning capacities of all of its citizens throughout all of their lives” (1991, p. 183).

For change of this magnitude to happen we must look at reinventing the concept of Education and recognize that “formative education is a result of a continuous process of interaction between individuals and their environment” (Csikszentmihalyi, 1995,

p. 107). According to Falk and Dierking (1999) this can only be accomplished through collaboration and integration of more learning institutions into the educational infrastructure. “This infrastructure should be viewed as an interwoven network of educational, social, and cultural resources, of which museums are a vital component” (Falk & Dierking, 1999, p. 225).

Thomas (1991) views learning institutions, like museums, as invaluable members of society with their ability to aid in learning. Their importance is “incalculable because they are intended for citizens to use through free-choice” (Thomas, 1991, p.174). He advocates that government and the public should look at aiding these organizations in their educational missions so that their resources would be available to everyone. By doing so they will be demonstrating to citizens that “our society regards such resources as legitimate and intensely stimulating sources of learning” (Thomas, 1991, p.175).

Conclusion

The educational context at the start of the 21st century has been transformed due to several key factors. The increased demand for knowledge brought on by the Information Age (Dede, 1998) has resulted in the development of the Knowledge Society (Eisenstadt, 1998). People are realizing that to remain competitive they must continue to learn throughout their lives. They are increasingly seeking educational options from both formal and informal delivery methods. A renewed focus on the nature of learning is reshaping our definitions of education. Learning, now described as lifelong, is regarded as a social activity that is ongoing and can take place anywhere, for one’s entire life

(Forsyth, 1998; Jarvis, Holford, & Griffin, 1998). Free-choice learning is viewed as the strategy of choice for most people (Falk & Dierking, 2000). The role of educators and teachers is changing to that of mediators or facilitators to the access of information, assisted by new technologies (Jarvis, Holford & Griffin, 1998). These new technologies have empowered learners with more control over their own learning as well as an increased responsibility (Thomas, 1991; Shields, 1994). The redesign of education focuses on teaching and learning in an environment that is more learner-centered (Forsyth, 1998). This view sees education becoming a public activity for which the entire community is responsible, and learning becoming a collaboration between family members, business associates, seniors, students, scientists, and people across all age groups (Kozma & Shank 1998). This reinvention of education incorporates a broad array of learning institutions, including museums, as invaluable members to aid in learning (Thomas, 1991).

PART II. NEW TECHNOLOGIES AND THE EDUCATIONAL TRANSFORMATION

Introduction

The purpose of Part II is to discuss new media tools, and examine their capabilities and potential as seen by educators. The focus is on multimedia and interactive technology including the Internet, the World Wide Web, and Multimedia and Interactive programming in a networked or connected, online environment. The two sections are aimed at nontraditional educational institutions such as museums, which may use these technologies for online educational programming. Section 1: The Capabilities

of New Technology addresses some of the capabilities of new technology and highlights the ideas of flexibility, learner-centered programming, and interactivity. Section 2: Defining Multimedia and Interactive Technologies defines these terms and cites the key points for programming with multimedia and interactive technologies.

The Capabilities of New Technology

“Computer-based technologies have opened the door to a vast array of new learning opportunities because they are ideally suited for a student-centered educational environment” (Albright, 1999, p. 91).

Educators, curriculum developers, teachers, administrators, and learning advocates propose that new communication tools demonstrate great potential for a revised vision of education and learning (Forsyth, 1998). Dede (1998) believes “that properly designed and implemented computing and communications have the potential to revolutionize education and improve learning” (p. v). New media greatly empowers the user by placing the potential for learning in their hands (Barker & Tucker, 1990). New media tools or new technologies are generally regarded as those tools which merge multiple forms of communication media such as sound, text and visual elements (Perlin, 2000), most often with the aid of a computer. Further, it includes communication networks like Internet. Defined by Keene (1998), the Internet is a network of networks, a system of links between computers and computer networks large and small, plus the agreed upon rules and standards on how to use it and send data around it” (p.121). This network has been greatly enhanced by the development of hypertext or hyper-linking,

which empowers the user by placing the decisions for pace, direction, and content in their hands. Hypertext is defined as “a computer-based text retrieval system that lets users access increasingly more in-depth information about a topic” (NCREL, 1995, p. 19). These new technology tools are increasingly being used for educational programs that are delivered through the assistance of a computer, because they allow for the instruction to be developed as a self-pacing program (Svinicki, 1999).

Successful computer-assisted instruction as seen by Svinicki (1999) incorporates “all the values of self-paced instruction along with some new wrinkles that allow the program to be even more tailored to the individual user” (p.7). With the aid of networked multimedia and interactive tools, institutions now have a choice of alternative methods of delivery (Forsyth, 1998) for providing eclectic educational choices. These new programs have great potential to emphasize interaction and personal choice. By incorporating the capacities of new technologies, programs can be designed as learner-centered. Learner-centered learning, defined by the Interactive Learning Federation, is “a process rather than a technology implying the creation of an information-rich learning environment involving interactions between people--teachers and learners, print-based materials, computer based media, and hypertext media” (Barker & Tucker, 1990, p. 18).

Perlin (2000) advocates that flexibility as one of the underlying principles of new media program design and feels that by exploiting this flexibility, designers can harness the unique capabilities of new technologies. One such capability is Interactivity, a key feature found in the design of successful communication and educational tools

(Forsyth,1998). Forsyth (1998) believes the issue of providing interaction in education and training is critical. “Interactive learning is a situation in which the course of the learning is controlled by the learner, what the learner receives is a reaction to what they have themselves put into the system” (Barker & Tucker, 1990, p 40).

Another capability of new technologies is the opportunity for the development of partnerships that incorporate resources outside of the classroom (Dede, 1998). For example, online networks available through the Internet offer opportunities to connect learners with their local or even world community, providing access to resources not before available (Borysewicz, 1998). Students or individuals can engage and interact with real people and problems (Perlin, 2000; Albright, 1999), expanding the role of education out into the community. Dede (1998) argues that by exploiting the advantages of new communication technologies, educational programs can be designed that focus on meeting the demands of the 21st century educational objectives. On this same point, Borysewicz (2000), states, “Now it is possible for every museum, not to mention all for-profits and nonprofit institutions and every individual with the time and money, to become a multimedia content provider” (Borysewicz, 2000, p.104).

Defining Multimedia and Interactive Technologies

“Multimedia is a powerful tool. It will change the way we look at knowledge and give us a new vision of reality. It already has” (Ambron, 1990, p. 22).

The terms, *New Media*, *Multimedia* and *Interactive Technologies*, are all being widely used today to refer to new technologies that merge multiple elements of communication media. They have collided with the educational reform movement and might be partially responsible for the educational paradigm shift described in Part I (Forsyth, 1998).

Multimedia is essentially the “convergence of three technologies, computing, broadcasting and publishing” (Barker & Tucker, 1990, p.22). Educators have for decades used tools that incorporate different media types, or a combination of words, sounds or images delivered through various methods. At the beginning of the new millennium, multimedia is most often defined as a collection of images, sound, and text delivered simultaneously from a device or “a collation of disparate media from a single presentation device, most typically a computer” (Barker & Tucker, 1990, p. 20). Multimedia is being viewed by many as a means to extend the richness of learning environments (Boyle, 1997).

Multimedia is often linked to the term *interactive*, which has recently taken on many new meanings in the multimedia computer environment. Interactive or interactivity can be simply viewed as a user’s interaction with the various media being delivered (Barker, & Tucker, 1990). Interactive Multimedia (IMM) programming has demonstrated great potential for delivering educational content. “Computer-based technologies have opened up doors to a vast array of new learning opportunities because they are ideally suited for student-centered educational environments” (Albright, 1999, p. 91). The empowerment

of the user is what is fueling an interactive multimedia revolution. Advocates for its use cite the following key points:

- IMM programs are information rich;
- IMM programs allow for varying learning styles or methods, such as visual learners;
- IMM programs are learner-centered or learner-controlled; thus the learner is empowered;
- IMM programs empower teachers with new tools and expand their resource base;
- IMM environments actively engage learners and emphasize connectivity theories;
- IMM environments can be personalized or individualistic;
- Connected to a network, IMM allows for broader interaction with the community and learning to become social (Barker & Tucker 1990; Forsyth, 1998).

This list highlights the key points that attract developers of new media programs and is not intended to be comprehensive. As with any tool, the appropriateness of its use for the subject and audience determines its success. Not all multimedia programs are or can be interactive, and simply adding interactive elements to a program will not guarantee its quality. “A central issue in Interactive Multimedia design is the nature and quality of the interaction” (Boyle, 1997, p. 20).

Conclusion

New computer-based technologies are demonstrating great potential for use in designing educational programs (Forsyth, 1998). Technologies that incorporate multimedia and interactivity have increased capabilities for developing rich, learner-

centered, user empowered learning activities through their enhanced flexibility (Perlin, 2000; Svinicki 1999). When using alternative methods of delivery and connected to a network, these programs expand learning options and connect users to resources not otherwise obtainable (Dede, 1998). Dede (1998) suggests that by exploiting the advantages of new communication technologies, educational programs can be designed that focus on meeting the demands of the 21st century educational objectives. In the next and last parts of this chapter, I examine how the development of these tools has affected the way museums develop programs and how they can assist them to become vital educational providers.

PART III. THE CHANGING EDUCATIONAL ROLE OF MUSEUMS

Introduction

The purpose of Part III is to examine museum education. The three sections cover a discussion of the roots of museum education and the increased role of museum educators, collaborations for learning, the use of online technology by museums, and recent research on museums and online educational programming. Section 1: The Role of Museums as Educators highlights important documents for museum education, touches on museum learning and the changing ideas of interpretation. Section 2: Collaborations for Learning discusses how museums are collaborating with schools and other informal learning institutions to increase learning options with assistance of online technologies. Section 3: Museums Online explains the use of online technologies by museums and current attitudes toward using these tools to enhance their missions. It highlights some of

the benefits of using interactive multimedia programs for museum education and presents research about current programs being offered by museums.

The Role of Museums as Educators

“The opportunities for increasing the impact museums have locally and nationally are enormous” (Pitman, 1999, p. 13).

In recent studies of museum learning, researchers John Falk and Lynn Deirking of the Institute for Learning Innovation found that “increasingly museums can be described as public institutions for personal learning, places people seek out to satisfy their learning needs” (2000, p. xii). This educational role may be a direct result of the growing commitment of the museum community over the past three decades to focus greater attention on the educational part of their missions. This change can be traced to the forming of EdCom, The Education Committee of the American Association of Museums (AAM), created on June 6, 1973 (Pitman, 1999). Until this time the AAM did not have a separate committee to address issues of museum education.

Then in 1984, a group from the AAM formed the Commission on Museums for the New Century and released a 143-page report. Among other directives, this report acknowledged the importance of education in museums and called for elevating the function of museums to that of equal status as schools (Blackmon, 1999). Education came to the forefront in preparing museums for the next century (Pitman, 1999). Roberts (1997) views the 1980s as the watershed years for museum education. She contributes this time as the beginning of a transformation in museum practices that saw educators in

increasing numbers sharing a part in the exhibit development and design. “Growing professionalism--along with a climate whose watchwords include accountability, customer service, and educational reform--had made education a serious and central function in museums” (Roberts, 1997, p. 1).

In 1992, an AAM committee released the document *Excellence and Equity: Education and the Public Dimension of Museums*. The document was the result of a two and a half-year process to prepare a policy statement on education and access in museums. (Pitman, 1999). Adopted by the AAM Board of Directors in 1991, the report is considered a landmark document, being that it was the first major report on the educational role of museums to be issued by the AAM (AAM, 1992). Museums today are continually influenced by the report’s recommendations which “ranged from a discussion about the central role of museums as educational institutions, with the responsibility for public service shared by the entire staff and board, to a call for increased leadership and financial support” (Pitman, 1999, p. 23). The recommendations stress the significance of museums in the educational complex of a democratic society by visualizing them as vital members in the broad educational system (AAM, 1992). Since its publication, the role of museum education has seen a significant expansion in its definition (Frankel 1999).

Today, museum educators are responsible for much more than just educating (Roberts, 1997). Over the last three decades their jobs have begun to encompass all that is connected to audiences: program and exhibit development, school field trips, teacher

training, continuing education, community outreach, volunteer management, visitor studies, and fundraising (Roberts, 1997). George (1999) sees the role of museum educators as demonstrating that museums are preserving our nation's culture with a commitment to research and education and through their sharing of the remarkable collections and knowledge with the world. Thus he feels museums "must open their doors wider to enlighten and enrich the lives of millions of student and adult learners" (George 1999, p. 38).

Mintz, (1999) believes that museum professionals play a part in this Knowledge Society (Eisenstadt, 1998), being that they are knowledge workers engaged in the creation and transfer of information. Their role of translating information into knowledge and fostering understanding is crucial (Perlin, 1999). Mirroring society's focus on the need to acquire knowledge and the notion that "knowledge is socially constructed and shaped by individuals' particular interests and values" (Roberts, 1997, p. 2), now there has arisen a dialogue about exactly what knowledge museum educators should be transcribing. This is resulting in a shift to a concern about meaning-making, narrative, and individual interpretation (Roberts, 1997). According to Roberts (1997) educators are playing an important role in this paradigm shift in museums from Knowledge to knowledges. She see education as no longer about merely interpreting objects "but also deciphering interpretations--in other words, anticipating and negotiating between meanings constructed by visitors and the meanings constructed between museums" (Roberts, 1997, p. 3). Museum educators have struggled to demonstrate a new definition of museum education from one that merely provides text panel labels to one that involves

the entire institution in developing active informative educational programs. White (1999) attributes this struggle to the inherent contradiction in museums' missions: concern for preservation pitted against the demand for public access to the collection. Falk and Deirking (2000) acknowledge a shift in the focus of museum education from "one that has visitors and their experience ascend over the single-minded pursuit of the collection and preservation of the object" (p. 205).

Responding to the changing needs of our society and the failure of formal education to meet all the needs of its citizens (Rogers, 1994), museums are beginning to visualize themselves as active members of the educational community (Falk & Deirking 2000). Many in the museum community feel that "the formal educational potential of the museum has been undervalued and greatly underestimated" (Skramstad, 1999, p. 118). Falk and Dierking (2000) advocate that museums have the potential to contribute to the educational infrastructure by acting as vital educational providers. Seasoned museum educators claim that museums "offer a powerful educational model that can help redesign and reform American education" (Skramstad, 1999, p. 109). Thus, they have seen the great potential for advancing the museum educational model. This model "focuses on experiential and content-based problem-solving activities working with the real objects of art, history, and science; on participatory, "hands-on" learning; on apprenticeship under the tutelage of people engaged in real world intellectual activity; and on learning experiences designed to engage all the senses" (Skramstad, 1999, p. 118). Falk and Deirking (2000) regard this as a "time to change our lens, to pan the camera back in time and space and view learning as a panoramic, lifetime event, an effort to make meaning"

(p. xiv), and advocate that museums need to be understood and promoted as integral parts of a society-wide learning infrastructure.

“Museum educators are charged with a responsibility that, on the surface, appears straightforward but actually holds radical implications for what a museum is” (Roberts, 1997, p. 2). Sixteen years after the *Museums for a New Century* report was published, its directives have yet to become reality. However, museums’ greatest opportunity to demonstrate their strength may be more possible now than ever before. Pitman (1999) sees the renewed attention to the reform of our nation’s educational system as an opportunity for museums to share in the process. “Given our awesome and uncommon resources, we have an exciting opportunity to become effective partners in addressing this national priority” (Pitman, 1999, p. 41).

Collaborations for Learning

“A spirit of collaboration is sweeping the museum community and a growing number of museums find themselves involved with partnerships with other cultural and educational institutions, particularly the schools” (Falk & Dierking, 2000, p. 222).

Museums are collaborating with schools and universities and other informal learning institutions to increase learning options (Falk & Dierking, 2000). Dede (1998) feels a connection between schools, home, and the rest of the community, or formal and informal learning, will allow communities to reintegrate education into daily life. “As museums continue to create greater opportunities for informal public learning, many

museum professionals are eager to make museum resources available to visitors through the various forms of new media” (Borysewicz, 2000, p.103). Albright (1999) notes the dramatic growth in past decades of Internet applications for delivering education, and sees distance education as “academe’s most prominent growth industry at the turn of the millennium” (p.95). It is as an obvious next step for them to embrace the new media and communication tools of the 21st century to continue their programs. Falk and Dierking (2000) see an unprecedented opportunity for museums afforded by distance learning technologies, particularly video conferencing and the Internet via the World Wide Web. These same new communication tools that have empowered individuals to take control of their own learning have also enabled new and effective partnerships for learning (Thomas, 1991; Dede, 1998). According to Bernstein (1999), museums are invaluable partners for other formal and informal educational institutions because their collections and the stories behind them offer real advantages for developing meaningful, authentic programs that can now be delivered to a large audience using new networked tools.

Museums are seeing their roles as active members of the educational community expand from beyond their visitor and school groups and weekly programs (Frankel, 1999). With the aging of the American population and the increased demand by learners who are taking more control of their own learning, a primary area being expanded is that of lifelong learning. Frankel (1999) feels that museums have a major responsibility to commit themselves to their role as lifelong educational institutions and to contribute to the quality of life in their community. The skills that museums teach for learning “observation, questioning, critical thinking, intuitive thinking, feeling and articulating are

very important in an individual's lifelong learning education" (Bernstein, 1999, p. 116). Museums have begun to develop more extensive educational programs to reach more people, utilizing partnerships and the benefits of the increased methods of delivery. (Falk & Dierking, 2000; Bearman & Trant, 2001). Yet according to Frankel, "a challenge remains in making our museums' rich educational resources part of everyone's future" (1999, p. 166).

Thomas (1991) believes that we clearly can no longer expect the current educational structure to help us meet all or even most of our learning needs. "Instead resources for learning will have to be shared on a larger scale than ever before" (Thomas, 1991, p.175). He calls on direct intervention from state and or the Federal government to aid in the creation and maintenance of learning resources, such as museums, libraries, and parks. As museums seek to extend their educational programming with new tools, Pitman (1999) sees collaborations at the local, regional, and national levels becoming increasingly important.

Museums Online

"The Net of the future will be the equivalent of fire" (Ferren, 1996, p. 129).

The "Information Age" (Mintz, 1998) has brought enormous potential for allowing greater access to information by nearly anyone who has access to a computer. This has been an exciting time for the museum community as they embrace the new tools and find innovative ways to manipulate them for their own missions (Bearman, & Trant, 2001; Mintz, 1998). "For museums the opportunities have never looked greater--there is

a reaffirmed desire to use the medium to connect with our audience and to create something really useful” (Bearman & Trant, 2001, p. 3).

Museums are uniquely positioned with all the pieces to engage in a networked, online interactive community (Bearman, & Trant, 2001), and have been quick to realize the potential and power of the Internet and the World Wide Web (Borysewicz, 1998). Hermann (1997) feels that museums’ possession of our cultural heritage, the information about their collections, is their primary asset in the wired world. “Managing and exploiting that asset becomes a critically important task if museums are to retain a significant voice in our cultural discourse” (Hermann, 1997, p. 70).

After only a few years online, museums quickly began transitioning from passive providers of cultural knowledge to active online programmers (Sumption, 2001; Borysewicz, 1998). Responding to the growth in online use by museums an organization called Archives & Museums Informatics developed the international conference, Museums and the Web, with a mission “to explore the impact of network technology and museums programs” (Bearman & Trant, 2001, p. 3). The first meeting was in 1997. The conference founders, David Bearman and Jennifer Trant, promote the idea that “creative use of the web has expanded and enhanced museums’ missions” (Bearman & Trant, 2001, p. 3). In the same year, the American Association of Museums published the title, *The Wired Museum*, in which Maxwell Anderson declared that “the future is online and that shrink-wrapped delivery systems like CD-Roms will have a relatively short shelf-life” (Anderson, 1997, p.16).

Museums were quick to recognize the potential to greatly expand their outreach through using the Internet and World Wide Web by establishing a web presence for marketing and electronic commerce or e-commerce (Anderson, 1997). They also used these tools to forge new connections with previously separate groups, such as expert and novice, and student and researcher. Further, “by exploiting their competitive resources, that of authority, authenticity, and the ability to create lasting, transformational experiences” (Falk & Dierking, 2000, p. 232), museums moved to develop active online programming primarily through their education departments. By 1998, the Internet was regarded by the museum community as “the primary conduit for moving the content of museums and exhibitions into homes, schools, universities, and libraries” (Perlin, 1998, p. 82).

The growth in active online programming can be witnessed in the session titles for the annual Museums and the Web conference, where the word “interactive” began to make a repeated appearance. The 2001 conferences of Museums and the Web and the American Association of Museums further demonstrated the enormous growth of museums actively presenting online exhibits and educational programs. The upcoming 2002 Museums and the Web conference has two full day online educational workshops scheduled, one titled “E-learning” and the other “Effective Web Education” (www.archimuse.com/mw2002/workshops).

Anderson (1997) advocates that museums are in the position to reach audiences never before imagined with creatively gathered and delivered methods that the marketplace maybe slower to deliver. Developers of online programs seem to understand that museum success will continue only by pushing boundaries and technologies (Bearman & Trant, 2001). Borysewicz (2000) sees museums as “forging ahead, delivering highly educational, interactive, informal content to an eager public” (p. 105).

“Museums are beginning to grapple with the possibility of reaching audiences beyond their walls but have yet to organize themselves to achieve the best possible results” (Anderson, 1999, p. 157). Many museums recognize the great potential of multimedia for online educational programs and their early attempts have some regarding them as pioneers in this area (Bearman & Trant, 1999). With diverse and compelling resources to draw from and resident experts and educators on staff, museums have great flexibility in their programming (Falk & Dierking, 2000). This flexibility allows for museums to focus on developing learner-centered programs that can be tailored to individuals. “The newer media provides an experience of directness and immediacy by enabling the user to become an active participant in the program” (Perlin, 1998, p. 80). The benefits of multimedia parallel the ideas of museum education by personalizing experiences and providing active hands-on programs. “Museums’ special talent for creating conceptually coherent, thematically interactive multimedia programs gives us a tremendous advantage in the new media production” (Borysewicz, 1998, p. 113). Jones-Gamil (1997), advocates that to harness the real power of multimedia and interactive

technology, these programs must be presented on a network like that of the World Wide Web.

Starting around 1995, museums and libraries began developing web sites at an incredible rate (Jones-Gamil, 1997). These quickly transitioned from passive sites to active, with museums including online Interactive MultiMedia educational programs for use by visitors (Sumption, 2001). Since this type of programming is new territory, not just in the museum field, but across a number of disciplines, researchers have taken interests in this work and begun evaluating the results. One such researcher, Kevin Sumption, of the Powerhouse Museum and Australian Museums Online, documents the shift in museums' use of the Internet as an online brochure to direct experience-based learning environments to most recently, IMM educational products centered on the students rather than the objects. He contributes this to a refocusing on the user as learner and a concentration on the different methods and styles of learners and learning environments. Presenting at the Museums and the Web conference in March 2001, Sumption outlined six classifications he has developed in which online interactive educational content is currently being delivered by museums:

- (1) Educational Metacenters: teaching and learning with museum artifacts. Users are able to explore, investigate and compare documents, images.
- (2) Creative play resources: users are allowed to explore and test through written, oral, and artistic activities, mostly geared for children over eight years of age.

- (3) Electronic field trips: or goal-based scenarios using anchored instruction to activate reasoning, deduction, and investigation to navigate through virtually created environments.
- (4) Video conferencing: real time interactions using exhibit materials and experts from museum staff.
- (5) Museum learning networks: usually focused around a single discipline like the Science Learning Network, where a collaboration happens between groups of organizations often to create a collaborative product; users collaborate with other users, or experts through e-mail, bulletin boards or chat rooms.
- (6) Expository teaching resources: highly structured activities communicating a set of principles, laws, or theories through experiments that have restrained interaction.

The primary motive for developing these categories was to determine if the users actually were learning from these online programs. Acknowledging the efforts of museums, which usually are produced in solitude and without “any workable evaluation framework” (Sumption, 2001, p. 160), Sumption makes a plea for more formable research and summative evaluation. “It is not until we have a better understanding of the real outcomes, against those intended, that museums will be able to advance the practice of active learning product development” (Sumption, 2001, p. 160).

In a short time there has emerged great acceptance for these new multimedia and networking tools within the museum community (Bearman and Trant, 2001). With the

for-profit community now also in the market, museums are exploring new ways to extend their offerings and stay competitive. “We can see the creativity and knowledge resident in our cultural institutions teaming up with academic and technical innovations to define the very frontiers of novelty on the web” (Bearman & Trant, 1999, p. 21).

Conclusion

The museum community has focused with increased effort over the last two decades on the educational aspects of their mission. This has resulted in both a new and expanded definition of museum education and increasingly diverse roles for museum educators. The growing interest in nontraditional, free-choice learning has provided museums with the opportunity to advance the museum educational model (Skramstad, 1999). Museums are developing more programs aimed at adults to respond to the increased demand for lifelong learning options (Falk & Dierking 2000). Through the aid of network technologies, the Internet, and the World Wide Web, museums can now deliver to a large audience meaningful, authentic programs using the stories from their collections (Bernstein, 1999). As museums look to extend their educational programming with new tools, collaborations at the local, regional, and national levels are becoming increasingly important (Pitman, 1999).

Museums realized quickly the potential and power of the Internet and the World Wide Web (Borysewicz, 1998). Since 1995, museums and libraries have been developing web sites at an incredible rate. These quickly began to include online Interactive Multi Media educational programs (Sumption, 2001; Jones-Gamil, 1997).

The benefits of multimedia support the ideas of museum education by personalizing experiences and providing active hands-on programs. Museums can exploit the potential of the new tools to develop flexible, learner-centered programs for online delivery (Falk & Dierking, 2000). With creatively developed and progressively delivered programs, museums may have an advantage in reaching audiences never before imagined (Anderson, 1997). Already many museums have begun offering IMM educational products centered on the students rather than the objects via the Internet. Once formal research and summative evaluation is done on these programs and their outcomes, we will have a better idea as to how they are effective (Sumption, 2001).

PART IV. MUSEUMS AS VITAL ONLINE EDUCATIONAL PROVIDERS

Introduction

The objective of Part IV is to summarize the ideas presented in the previous three parts as they relate to the purpose of the study. This includes two sections: 1) Conclusions, which offers an overview of the ideas found in Parts I-III; and 2) Implications, which attempts to tie together these ideas in support of the purpose of the study and as a way to make recommendations for action.

Conclusions

The focus of recommendation three of the 1992 AAM report, *Excellence and Equity: Education and the Public Dimension of Museums*, is on leaning in the museum. It states that museums should “understand, develop, expand, and use the learning opportunities that museums offer their audiences” (AAM, 1992, p.16). It further

elaborates this recommendation by suggesting that museums “utilize the growing potential for extending the educational role of museums beyond their walls through electronic media, and conduct systemic studies to assess the effectiveness of these resources” (AAM, 1992, p.17). This statement provided a historical framework for this study in its progressive vision to encourage the museum community to explore the possibilities of emerging technologies for museum educational programming. By connecting ideas from across the different disciplines of education, technology and museology, I hoped to demonstrate to museum educators the present opportunity, created in part by new communication technologies, for museums to assume a role as active educational providers.

This was demonstrated with a discussion of the transformation of the educational context at the start of the 21st century. Drawing from educational reform and teaching and learning pedagogy literature, connections were made to highlight the changing educational demands and new ideas for expanding education. The emphasis was on the paradigm shift of education. This includes the notion that all individuals need continuous learning throughout their lives--a concept known as lifelong learning (Forsyth, 1998; Jarvis, Holford, & Griffin, 1998). In addition, learning options are expanded to include nontraditional, informal, free-choice, learner control environments. Further discussion addresses the different roles for educators and teachers and the need for collaboration and integration of more learning institutions into the educational infrastructure. These ideas recognize “the broader processes involved in formative education” (Csikszentmihalyi, 1995, p. 107), to incorporate “a new conception of the appropriate relationship between the school and its community, parents and families” (Shields, 1994, p.1).

Building on these ideas, the review continues by exploring the new technologies as part of the educational transformation. The focus is on multimedia and interactive technologies (the Internet, the World Wide Web, and Multimedia and Interactive programming) in a networked online environment. The discussion elaborates on the capabilities and potential, as seen by educators, of new media tools. Literature was used to build the case for the idea that “properly designed and implemented computing and communications tools have the potential to revolutionize education and improve learning” (Dede, 1998, p. v). The definitions and perceived benefits for educational programs are listed. Using these ideas, a connection is drawn that demonstrates the overlap in the goals and benefits of new communication technologies to that of museum learning and educational programming. This starts with an overview of the role of museum educators and the changing notion of museum education, and is followed by a discussion of the influences of technologies on institutions.

The review continues with a discussion of the realization by the museum community of the potential and power of the Internet and the World Wide Web to enhance their missions (Borysewicz, 1998). This is supported with opinions from various museum professionals who see that “the future is online” (Anderson, 1997, p.16). A discussion of the shift from passive providers of cultural knowledge to active online programmers (Sumption, 2001) frames the current use of multimedia online educational programming as categorized by the researcher Kevin Sumption (2001). The acceptance for these new multimedia and networking tools within the museum community (Bearman

& Trant, 2001) is clearly demonstrated. However, there is still a need for further research and evaluation in order to determine the effectiveness of these new programs (Sumption, 2001).

Implications

“Museums can assume an important position within the world of teaching and learning” (George, 1999, p. 42).

The 1996 symposium, *Museums for the New Millennium*, was intended to be a meeting that discussed issues of the past and future (Weil, 1997). A primary focus was on new technologies, their effect on museums, and their possible implications for development. Speaker Bran Ferren, who at the time was the senior vice president of creative technology at Walt Disney Imagineering, claimed that “the Net and what it will evolve into is clearly the most important storytelling technology ever developed” (1997, p. 132). Although no firm directives were issued from this symposium, many progressive ideas were examined. Yet little real action has occurred. Museums have only begun to grapple with these new technologies and the opportunities that they present. Through my participation in recent conferences, I have witnessed the obvious excitement that is apparent throughout the museum community, as well as the innovative experimentation happening within (too) few museums. Museums have the opportunity to build innovative experiments specific to their institutions in frameworks, databases, search engines and programs that are outside concerns for wide market appeal.

It is in Ferren's (1997) claim that I see the greatest potential for museums to tell their stories in ways not before imagined. The changing perspectives on education and learning, the new communication tools constantly becoming available, and the increased energy within the museum community to develop their educational missions all support these new directions in museums. By specifically focusing on education, museums can develop stimulating, inspiring thought-provoking programming for a large and diverse audience. By doing so they would be demonstrating their unique and vital roles as educators in the overall educational infrastructure.

I was surprised to find the 1984 *Museums for a New Century* document that nearly two decades ago proposed what I am finding to be possible today--that is, museums assuming a role as vital members of the United States educational infrastructure--with the added help of new technologies. However, the potential benefits for education enabled by the new communication tools do not come without questions. As online educational programmers become as diverse as the programs they offer (governments, universities, K-12 schools, business, libraries, and museums) how do museums fit into this mix? How can they compete with large institutions and corporations with big budgets? How can they guarantee that the programs they offer will be in demand in such a vast market?

At the conclusion of this study, as I see it, three things need to take place. The museum community needs to:

- Unite (with like institutions as well as schools);

- Educate (educators, policy makers and the public); and
- Protect (the integrity and commitment to liberal arts education).

Unite

“Alliances are essential if museums are to help effect a shift in the political definition of learning, which in turn should lead to significant increases in public and private support for museums” (Falk & Dierking, 2001, p. 232).

Museums need to build a collation of free-choice learning organizations (Falk & Dierking, 2000). This would provide a powerful lobbying force for the redistribution of public educational monies (Falk & Dierking, 2000). However, this should also include working with the formal educational providers through collaborations between museums and communities, schools and business. These collaborations would demonstrate strong examples of a community working together to offer programs that otherwise might not come into existence, acknowledging that education is a responsibility that falls on the entire community. Through partnerships and collaborations, museums may work to create a new learning landscape and assume greater educational roles.

Educate

“The educational infrastructure needs to be viewed as an interwoven network of educational, social, and cultural resources, of which museums are a vital component” (Falk & Dierking, 2001, p. 225).

Museums should continue to educate educators, policy makers and the public on the value of their institutions in support of the expansion of the educational infrastructure. Museums need to continue to encourage the change in the structure of our society to value learning as a priority over teaching. By staying connected with current issues of education reform and by seeking out successful collaborations, museums can join the public discourse about who is responsible for education, who are the learners, and where and when it is appropriate and accessible to learn. The public needs to be made continually aware of the benefits of the programs offered by museums. By encouraging and conducting more research and evaluation on all aspects of learning online, museums will have access to better information for developing successful programs and for lobbying support and participation for these programs from the community.

Protect

“Liberal education is, now, ineffective; because university culture, like American culture writ large, is ever more devoted to consumption and entertainment, to the using and using up of goods and images etc.” (Berman, 2000, p. 95).

The excitement created by the possibilities for online educational programs should not mask some of the concerns that need to be examined regarding programmers. Some of the issues that will continue to be of concern are:

- Education and learning as the primary concern for programming;
- Preserving diversity in voices of presenters;
- Authority and quality of programs as opposed to entertainment value; and

- Accessibility for diverse users.

For museums to be effective educational institutions they need to continue to develop and maintain a high standard of creativity for the development of educational programs, exhibits, and research (White, 1999). As schools and districts embrace partnerships with businesses and corporations, museums may need to remind these partners of their valuable resources. Because museums lack a monetary base to support viable partnerships with schools on their own, they will need to build on their intellectual resources, expertise, and collections. It will be up to museums not only to court schools, governments, and businesses, but to demonstrate that they should be part of the community-school-business partnerships. This model might find businesses providing the capital and museums the creativity, content, and programming, along with teachers' expertise.

Museums may find themselves in a role as advocates for learners in an attempt to promote online educational programs that are focused on education and learning of all subjects, not just those needed to meet state standards. This will require museums to be active participants in the education discussion. This advocacy may also focus on access to these online programs for all users who are interested.

Museums should be concerned with advocating for well rounded, diverse educational programs that focus on the educational value of their programming over the entertainment level. Competitors in the online educational market may have larger

development budgets but may also be more concerned with their “return on investment”. Museums’ objectives are different from theirs. A key issue will be finding the appropriate balance for education in which learning is active and fun and yet does not become just entertainment. Museums will need to guard against the “demand for low level education in conjunction with high levels of entertainment” (Berman, 2000). This balance will most likely arise out of the educational collaborations between diverse partners. These partners can then each offer a variety of voices to the process. “Our communities and the rich resources of museums have an important role to play. To educate for life--not merely for living--is the real mandate” (George, 1999, p. 38).

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